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System Identification Approaches to Modeling of Tornado Acoustic Mechanisms[1] BRANDON WHITE, CHRISTOPHER PETRIN, IMRAAN FARUQUE, BRIAN ELBING, Oklahoma State University — Recent studies have shown evidence of tornadic infrasound production prior to tornadogenesis though the life of the tornado. Oklahoma State University has recently developed experimental apparatuses to provide flexible measurements of local atmospheric conditions around severe storm events. Although the physical mechanisms of tornadic infrasound are not well known, system identification methods can be applied to this newly available data to develop and validate models from leading hypotheses. Required adaptations and measurement considerations to fit system identification frameworks with existing models are discussed. Preliminary examples of applying of system identification techniques to identification focused severe storm simulations show progress in quantifying the state information and system structure needed to concisely model tornados. When combined with experimental measurements, these identification frameworks will provide insight into scaling of models and future tornado tracking

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